

Abstract

The method is for treating a liquid or a slurry of a liquid and solids, such as sludge, soil or fiber webs, with an ultrasonic energy. Movable endless members (214, 230) are provided that are permeable to the liquid portion of a slurry (204). An ultrasonic transducer (236) is disposed adjacent to the member (214) and the ultrasonic transducer (234) is disposed adjacent to the member (230). The slurry is fed in between the members (214, 230). The transducers (234, 236) generate pressure pulses through the members (230, 214) to form imploding bubbles (227) in the slurry. The bubbles (227) have a diameter (d5) that is greater than a distance (d3) between the transducer (234) and the member (230) and a distance (d4) between the transducer (236) and the member (214) to prevent the bubbles (227) from being captured between the transducers (234, 236) and the members (230, 214). In this way, the imploding bubbles can generate intense pressure, temperature and flow speed pulses in the slurry which can create sonochemical or sonophysical changes of the substances in the slurry without harming the ultrasonic transducer surfaces.